



PHYSICS

BOOKS - JBD PUBLICATION

Model Test Paper 15

Exercise

1. Dimensional formula for the coefficient of viscosity is :

A. $M^1 L^1 T^{-1}$

B. $M^{-1} L^1 T^{-1}$

C. $M^1 L^{-1} T^{-1}$

D. $M^1 L^{-1} T^1$

Answer:



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2. Can an object be at rest as well as in motion at the same time ?



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3. Static friction is more than kinetic friction.

(Yes / No).



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4. Force of friction is not aforce .



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5. Define degree of freedom.



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6. Which physical quantity has the same unit as moment of force?



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7. Will the sound travel faster, in wood or water?



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8. Find the dimensions of 'a' and 'b' in the following equation:

$$(P + a/V^2)(V - b) = RT$$



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9. $P = A^3 \cdot B^{\frac{1}{2}} \cdot C^1$. If percentage errors in A, B and C are 1, 2 and 4 respectively, then find the percentage error in P.



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10. Find the rectangular components of a vector R acting in a plane at an angle θ with the horizontal.



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11. If a running bus stops suddenly, the passengers standing inside it falls forward, explain why?



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12. Under what conditions the work done by a force will zero, give example of each?



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13. Why is it easier to rotate a disc than a ring of the same mass and size, about an axis passing through their centres?



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14. Define gravitational potential and find an expression for it.



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15. Why bridges are declared unsafe after long use?



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16. State Polygon law of vector addition and prove it using Triangle law of vector addition.



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17. Why does a cyclist lean to one side while going along a curve? In which direction does he lean?



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18. State and prove work energy theorem.



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19. How much mass of ${}_{92}\text{U}^{235}$ is converted into energy per day at a nuclear power plant operated at 10^6 kW ?



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20. Explain the effect of depth on the value of acceleration due to gravity and prove that at the centre of earth its value will be zero.



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21. A mass is divided into two parts so that the force of gravitation between them is maximum. Find the ratio of the masses of the two parts.



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22. Define coefficient of viscosity. Give its unit.



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23. State second law of thermodynamics ?



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24. Define the molar specific heats fo a gas and find a relation btween them.





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25. Define simple harmonic motion.



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26. What is Doppler's effect? Derive a general expression for the apparent frequency when both source and observer are in relative motion.



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27. What is beat of sound?



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28. What are stationary waves? State their characteristics.



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29. Define Angle of contact.



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30. Define modulus of elasticity and its unit.

Also write its dimensions. Describe different types of modulus of elasticity.



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31. What is anomalous expansion of water and its use in nature?



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32. Explain different modes of transfer of heat from one place to the other place along with example.



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33. Prove the theorem of parallel axes.



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34. Where will be the centre of mass of a uniform thin rod of length l ?



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35. Upon what factors the centre of mass of a body depends?



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36. Define angular momentum and find its relation with moment of inertia.



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